

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A SUBMISSION UNDER 35 U.S.C. 371**

ATTORNEY'S DOCKET NUMBER

873.0132.U1(US)

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

10/533248

INTERNATIONAL APPLICATION NO.
PCT/US2003/034414

INTERNATIONAL FILING DATE
29 October 2003

PRIORITY DATE CLAIMED
29 October 2002

TITLE OF INVENTION

Low Complexity Beamformers for Multiple Transmit and Receive Antennas

APPLICANT(S) FOR DO/EO/US

Krishna Kiran MUKKAVILLI, Ashutosh SABHARWAL, Behnaam AAZHANG

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a submission under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a submission under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☐ The US has been elected (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c)(2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/PEPA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 23 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A power of attorney and/or change of address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821 - 1.825.
20. ☐ A second copy of the published International Application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the International Application under 35 U.S.C. 154(d)(4).
22. ☒ Express Mail Label No. EV 734 376 347 US
23. ☐ Other items or information:

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO.		ATTORNEY'S DOCKET NUMBER	
10/533248		PCT/US2003/034414		873.0132.U1/(US)	
The following fees are submitted:				CALCULATIONS	PTO USE
24. <input checked="" type="checkbox"/> Basic national fee	\$300	\$	\$300.00		
25. <input checked="" type="checkbox"/> Examination fee					
If International preliminary examination report prepared by USPTO and all claims satisfy provisions of PCT Article 33(1)-(4).	\$100	\$	\$100.00		
All other situations.	\$200				
26. <input checked="" type="checkbox"/> Search fee					
Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority	\$100				
International Search Report prepared and provided to the Office	\$400	\$	\$100.00		
All other situations.	\$500				
TOTAL OF 24, 25 and 26 =				\$	\$500.00
<input type="checkbox"/> Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing or computer program listing filed in an electronic medium). The fee is \$250 for each additional 50 sheets of paper or fraction thereof.					
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round up to a whole)	RATE		
- 100 =	0 /50 =	0	x \$250.00	\$	\$0.00
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	45 - 20 =	25	x \$50.00	\$	\$1,250.00
Independent claims	12 - 3 =	9	x \$200.00	\$	\$1,800.00
MULTIPLE DEPENDENT CLAIMS (if applicable) <input type="checkbox"/> + \$360.00				\$	\$0.00
TOTAL OF ABOVE CALCULATIONS =				\$	\$3,550.00
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$	\$0.00
SUBTOTAL =				\$	\$3,550.00
Processing fee of \$130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	\$0.00
TOTAL NATIONAL FEE =				\$	\$3,550.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40 per property +				\$	\$0.00
TOTAL FEES ENCLOSED =				\$	\$3,550.00
				Amount to be	\$
				Amount to be	\$
a. <input checked="" type="checkbox"/> A check in the amount of \$ <u>\$3,550.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Director is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>50-1924</u> . A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.					
NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.					
SEND ALL CORRESPONDENCE TO:					
Customer No. 29683			SIGNATURE		
Harrington & Smith, LLP			Gerald J. Stanton		
4 Research Drive			NAME		
Shelton, CT 06484-6212			46,008		
(203) 925-9400			REGISTRATION NUMBER		

JC14 Rec'd PTO 29 APR 2005

Express Mail No. EV 734 376 347 US
IN THE U.S. PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of:
Applicant: Mukkavilli et al.
U.S. Serial No.:
International Application No.: PCT/US2003/034414
International Filing Date: 29 October 2003
Title: Low Complexity Beamformers for Multiple Transmit and Receive Antennas
Attorney Docket No.: 873.0132.U1(US)

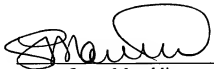
Certificate of Mailing

I hereby certify that the following correspondence:

Transmittal Letter to U.S. Designated/Elected Office
Preliminary Amendment
WO 2004/040690 A2 published application
Information Disclosure Statement with PTO-1449
International Search Report
International Preliminary Examination Report
Check for \$ 3550.00
Self addressed stamped post card

Is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, Mail Stop PCT.

Date: April 29, 2005


Lynn Maroldi